

REMARKS

Reconsideration and withdrawal of the objections and rejections set forth in the above-mentioned Official Action in view of the foregoing amendments and the following remarks are respectfully requested.

Claims 1-11 remain pending in the application, with Claim 1 being independent. Claims 1-11 have been amended herein.

Applicant notes with appreciation the indication that Claims 4 and 9 recite allowable subject matter. These claims were objected to for being dependent upon rejected base claims. However, these claims will not be rewritten in independent form at this time because independent Claim 1 is believed to be allowable for the reasons discussed below.

In response to the Examiner's request, Applicant is submitting a Request for Approval to Amend the Drawings, proposing to label Fig. 13 as --PRIOR ART--. Favorable consideration is requested.

Claim 2 was rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Without conceding the propriety of this rejection, Applicant has reworded the language questioned by the Examiner. Reconsideration and withdrawal of the § 112, second paragraph, rejection are requested.

Claims 1, 10/1 and 11/10/1 were rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,622,440 (Yamamoto et al.). Claims 2, 10/2 and 11/10/2 were rejected under 35 U.S.C. § 103 as being unpatentable over Yamamoto et al. in view of U.S. Patent No. 4,767,114 (Nishimoto) and U.S. Patent No. 5,961,234 (Uchikata). Claims 3, 10/3 and 11/10/3 were rejected under 35 U.S.C. § 103 as being

unpatentable over Yamamoto et al. in view of Nishimoto and Uchikata and further in view of U.S. Patent No. 5,255,023 (Bowlby, Jr. et al.). Claims 5/1, 6/5/1, 7/5/1 and 8/5/1 were rejected under 35 U.S.C. § 103 as being unpatentable over Yamamoto et al. in view of U.S. Patent No. 6,203,007 (Choi). Claims 5/2, 6/5/2, 7/5/2 and 8/5/2 were rejected under 35 U.S.C. § 103 as being unpatentable over Yamamoto et al. in view of Nishimoto and Uchikata and further in view of Choi. Claims 5/3, 6/5/3, 7/5/3 and 8/5/3 were rejected under 35 U.S.C. § 103 as being unpatentable over Yamamoto et al. in view of Nishimoto, Uchikata and Bowlby, Jr. et al. and further in view of Choi. These rejections are respectfully traversed.

As is recited in independent Claim 1, the present invention relates to a recording apparatus for recording on recording sheets by recording means. The recording apparatus includes transporting, proximal discharging and distal discharging rollers. The transporting roller is for transporting the recording sheets and is positioned upstream of the recording means relative to the transporting direction. The proximal discharging roller transports the recording sheets and is positioned downstream of the recording means relative to the transporting direction. The distal discharging roller is disposed downstream of the proximal discharging roller relative to the transporting direction and is of higher precision than the proximal discharging roller.

Yamamoto et al. relates to a thermal transfer recording apparatus 10 that includes feed roller 45 and discharge roller pairs 53, 54. Although the Examiner recognizes that the further downstream discharge roller is not disclosed in Yamamoto et al. as being of higher precision than the further upstream discharge roller, the Examiner

suggests that due to manufacturing tolerances, either one of the two discharge rollers “may be of slightly higher precision” and it would be obvious “to make the downstream roller of a higher precision, since such would result from routine manufacturing of the rollers.”

Applicant respectfully disagrees.

While two rollers made by the same method may have different precisions, there is no suggestion in Yamamoto et al. that the roller of higher precision should be positioned further downstream. Nor has the Examiner provided any motivation to affirmatively make the further downstream roller of higher precision than the further upstream roller. While it is possible that a pair of rollers manufactured according to the teachings of Yamamoto et al. may be of different precision, and it is possible that by chance the downstream roller may be of higher precision than the upstream roller, such is not sufficient evidence to deny patentability. To refuse patentability, the features of forming the further downstream roller of higher precision than the further upstream roller must be *necessarily* in the teachings of Yamamoto et al. Possibilities and probabilities are insufficient. Continental Can Co., USA Inc. v. Monsanto Co., 20 USPQ 2d 1746, 1749-50 (Fed. Cir. 1991).

Thus, Yamamoto et al. fails to disclose or suggest a distal discharging roller disposed downstream of a proximal discharging roller, with the distal discharging roller being of higher precision than the proximal discharging roller, as is recited in independent Claim 1.

Thus, Yamamoto et al. fails to disclose or suggest important features of the present invention recited in independent Claim 1.

The remaining citations have been reviewed, but are not believed to remedy the deficiencies of Yamamoto et al. noted above with respect to the independent claim.

Thus, independent Claim 1 is patentable over the citations of record.

Reconsideration and withdrawal of the § 103 rejections are respectfully requested.

For the foregoing reasons, Applicant respectfully submits that the present invention is patentably defined by independent Claim 1. Dependent Claims 2-11 are also allowable, in their own right, for defining features of the present invention in addition to those recited in independent Claim 1. Individual consideration of the dependent claims is requested.

Applicant submits that the present application is in condition for allowance. Favorable reconsideration, withdrawal of the objections and rejections set forth in the above-noted Office Action, and an early Notice of Allowance are requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,


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VERSION WITH MARKINGS TO SHOW CHANGES MADE TO SPECIFICATION

The paragraph starting at page 1, line 8 has been amended as follows.

The present invention relates to [a] recording [apparatus] apparatuses, having multiple transporting means for transporting sheets downstream from the recording means, such as facsimile apparatuses, photocopiers, printers, [facsimile apparatuses,] and so forth.

The paragraph starting at page 3, line 10 has been amended as follows.

To this end, a recording apparatus for recording on recording sheets by recording means comprises: a transporting roller for transporting recording sheets disposed [further] upstream [in] of the recording means relative to the transporting direction [than the recording means]; [plurality of] a proximal discharging [rollers] roller for transporting recording sheets [further] and being disposed downstream [in] of the recording means relative to the transporting direction [than the recording means]; and a [farthest-downstream] distal discharging roller disposed [farthest] downstream [in] of the proximal discharging roller relative to the transporting direction, [of the plurality of discharging rollers, which is] and being of higher precision than [upstream-side] the proximal discharging [rollers disposed further upstream] roller.

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The paragraph starting at page 7, line 7 has been amended as follows.

Also, a carriage unit 8 serving as a recording means is provided in the recording area, so as to perform predetermined recording on transported sheets P. With the present embodiment, serial ink-jet recording has been employed, wherein a carriage 8a is attached so as to reciprocally move along a guide shaft 8b, and a recording head and ink tank 8c are mounted on the carriage 8a. Ink is discharged from the recording head synchronously with the movement of [ht] the carriage 8a, thereby recording an ink image on the sheet P which has been transported into the recording area. Note that a recovery unit 9 is also provided at the end portion of the range of movement of the carriage 8a, so as to face the recording head, for suctioning ink from the recording head before starting recording to eliminate defects in ink discharging while recording.

The paragraph starting at page 7, line 22 has been amended as follows.

[Then, the sheets following] Following recording, the sheets are discharged with the discharging unit 7, and as shown in Fig. 2, are sequentially discharged and [staked] stacked in a discharging tray 10 detachably mounted to the bottom case 2 below the discharging unit 7.

The paragraph starting at page 8, line 9 has been amended as follows.

As shown in Figs. 4 and 5, the transporting unit 6 has a main transporting roller 13 for transporting sheets P, and a platen 12 for setting the distance between the sheets P and the recording head 11. Driving force from a motor 14 is transmitted to the main transporting roller 13. Also, pinch rollers 18 which move synchronously with the main transporting roller 13 due to the friction driving force of the main transporting roller 13 and the sheets P are in contact with the main transporting roller 13. The pinch rollers 18 are pressed toward the main transporting roller 13 by a spring member (not shown in the drawings), thereby generating the force for transporting the sheets P. Also, the pinch rollers 18 are set so that a pressing force of 500 [gf] (4.9 [N]) is applied by each of the pinch rollers 18 to the main transporting roller 13.

The paragraph starting at page 13, line 6 has been amended as follows.

On the other hand, the sheet P is in contact with the second discharging roller 17 in a manner wrapping onto the second discharging roller 17 in the circumferential direction thereof, due to the weight of the sheet P. Accordingly, the transporting force of the second discharging roller 17 placed on the sheet P becomes very great. Consequently, of the effects of transporting precision of the first and second discharging rollers 16 and 17, the [effects] effect of transporting precision acting upon the sheet P from the second discharging roller 17 is far greater than that of the first discharging roller 16.

The paragraph starting at page 15, line 14 has been amended as follows.

Note that the values, material, etc., listed in the present embodiment are only examples, and the present invention [needs] need not be restricted to these values, material, etc.

The paragraph starting at page 15, line 18 has been amended as follows.

Also, the number of discharging rollers [needs] need not be restricted to two; rather, the same advantages can be obtained using multiple discharging rollers of three or more.

The paragraph starting at page 17, line 10 has been amended as follows.

Note that the values, material, etc., listed in the present embodiment are only examples, and the present invention [needs] need not be restricted to these values, material, etc.

The paragraph starting at page 21, line 4 has been amended as follows.

Note that the values, material, etc., listed in the present embodiment are only examples, and the present invention [needs] need not be restricted to these values, material, etc.

The paragraph starting at page 23, line 12 has been amended as follows.

Also, although the above embodiments have been described with reference to the ink-jet recording method as [a] the recording method, [but] the present invention is by no means restricted to this; rather, the present invention is also applicable to other recording methods such as [the] thermal transfer recording [method] methods, thermal-sensitive recording [method] methods, impact recording methods such as wire-dot recording, or other electro-photography recording methods, etc.

The paragraph starting at page 24, line 10 has been amended as follows.

While the present invention has been described with reference to what are presently considered to be the preferred embodiments, it is to be understood that the invention is not limited to the disclosed embodiments. On the contrary, the invention is intended to cover various modifications and equivalent arrangements included within the spirit and scope of the appended claims. The scope of the following claims is to be accorded the broadest interpretation so as to encompass all such [modification] modifications and equivalent structures and functions.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

1. (Amended) A recording apparatus for recording on recording sheets by recording means, said recording apparatus comprising:

a transporting roller for transporting the recording sheets, said transporting roller being positioned [further] upstream [in] of the recording means relative to the transporting direction [than said recording means];

[plurality of] a proximal discharging [rollers] roller for transporting the recording sheets, said proximal discharging roller being positioned [further] downstream [in] of the recording means relative to the transporting direction [than said recording means]; and

a [farthest-downstream] distal discharging roller disposed [farthest] downstream [in] of said proximal discharging roller relative to the transporting direction [of said plurality of discharging rollers], [which is] said distal discharging roller being of higher precision than [upstream-side] said proximal discharging [rollers disposed further upstream] roller.

2. (Amended) A recording apparatus according to Claim 1, said [plurality of] proximal discharging [rollers] roller and said distal discharging roller each comprising:

a shaft serving as a center of rotation; and

a rubber roller portion [of a rubber member] for integrally [rolling] rotating with said shaft to transport the recording sheets, [;]

wherein the shaft of said [farthest-downstream] distal discharging roller is formed of metal, and the [shafts] shaft of said [upstream-side] proximal discharging [rollers are] roller is formed of resin.

3. (Amended) A recording apparatus according to Claim 2, wherein said [farthest-downstream] distal discharging roller is formed by polishing.

4. (Amended) A recording apparatus according to any one of [the] Claims 1 through 3, further comprising slave rollers each rotating synchronously with said [plurality of] proximal and distal discharging rollers, wherein the pressing force of a [farthest-downstream] distal slave roller rotating synchronously with said [farthest-downstream] distal discharging roller is greater than that of [upstream-side] a proximal slave [rollers] roller rotating synchronously with said [upstream-side] proximal discharging [rollers] roller.

5. (Amended) A recording apparatus according to any one of [the] Claims 1 through 3, further comprising load torque providing means for providing load torque to said [farthest-downstream] distal discharging roller.

6. (Amended) A recording apparatus according to Claim 5, wherein said load torque providing means [comprise] comprises a leaf spring and friction pad for pressing against the shaft of said [farthest-downstream] distal discharging roller.

7. (Amended) A recording apparatus according to Claim 5, wherein said load torque providing means [comprise] comprises a clutch spring wound onto said shaft of said [farthest-downstream] distal discharging roller.

8. (Amended) A recording apparatus according to Claim 5, wherein said load torque providing means [comprise] comprises a compression coil spring for pressing against a gear on the axis of said [farthest-downstream] distal discharging roller.

9. (Amended) A recording apparatus according to any one of [the] Claims 1 through 3, wherein the friction coefficient [which] between said [farthest-downstream] distal discharging roller [places on said] and the recording sheets is greater [that] than the friction coefficient [which] between said [upstream-side] proximal discharging [rollers] roller [place on said] and the recording sheets.

10. (Amended) A recording apparatus according to any one of [the] Claims 1 through 3, wherein said recording means [is] comprises a recording head which records on the recording sheets by discharging ink.

11. (Amended) A recording apparatus according to Claim 10, wherein said recording head applies electricity to electro-thermal converters [according to] in accordance with signals, and discharges the ink using thermal energy generated by said electro-thermal converters.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE TO ABSTRACT

A discharging unit has multiple discharging rollers for transporting sheets downstream from a recording head in the direction of transporting, arrayed in the direction of transporting. Of the multiple discharging rollers, a second discharging roller [at the farthest-downstream] disposed farthest downstream in the sheet transporting direction is formed with higher precision than a first discharging roller disposed further upstream.

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